

Patent Abstracts of Japan

PUBLICATION NUMBER : 61121326
 PUBLICATION DATE : 09-06-86

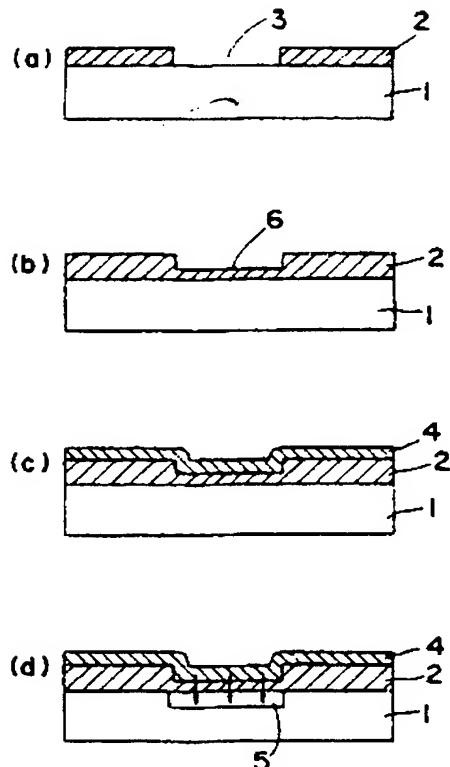
APPLICATION DATE : 19-11-84
 APPLICATION NUMBER : 59242384

APPLICANT : OKI ELECTRIC IND CO LTD;

INVENTOR : TSUBONE HITOSHI;

INT.CL. : H01L 21/225 H01L 21/322

TITLE : MANUFACTURE OF
 SEMICONDUCTOR DEVICE



ABSTRACT : PURPOSE: To form a diffused layer having high density and few defects under a lower temperature and in a shorter time compared with those in the non- additive case by adding a small amount of HCl in diffusion based on a doped oxide method using a buffer film of an oxide film during heat treatment.

CONSTITUTION: As a semiconductor substrate, for example, a thermal oxide film 2 is grown by approximate 10,000 \AA on a P type (boron doped) silicon substrate 1. A window is formed on the thermal oxide film 2 to provide an opening 3. Next, a thermal oxide film 6 of the thickness of approximate 800 \AA is formed on the silicon substrate 1 in the atmosphere of $\text{We}+\text{O}_2$ at 750°C. At this time, the thickness of the oxide film 2 which has been already grown up to that of 10,000 \AA hardly varies. Next, PSG (phosphorous glass) 4 of the thickness of 4,000 \AA is made to grow on the surface of the silicon substrate 1 by a normal temperature CVD device. In this time, the growth condition is assumed to be 8,000PPM at 410°C, PH_3 of 2.4l/min, SiH_4 of 0.8l/min and O_2 of 1.4l/min. Next, when this glass is heat-treated for an hour in the O_2 atmosphere and under a partial pressure 1.5% of HCl, phosphorous is diffused on the silicon substrate 1 via a buffer film of the oxide film 2 from the PSG 4 to allow a high density diffused layer 5 to be obtained.

COPYRIGHT: (C)1986,JPO&Japio